

## REMARKS

Claims 4-44 are cancelled; claim 2 is amended; and new claims 45-60 are added. Claims 1-3 and 45-60 are pending in the application.

The Examiner requests affirmation of Applicant's election of Group I in response to the Examiner's request for restriction of the claims in the application. Applicant hereby affirms that Group I is elected.

The Examiner objects to claim 2 for lacking an appropriate conjunction. Applicant has amended claim 2 to insert the conjunction "and" into the claim, and accordingly requests that the Examiner's objection to claim 2 be withdrawn.

Claims 1-3 stand rejected as being anticipated by Dunlop (5,590,389). Applicant disagrees, and requests reconsideration of such rejection.

Referring first to claim 1, such recites a sputtering target made by a process including casting and having a target surface with, among other things, a substantial absence of pores, voids and inclusions; in combination with a recited grain size less than about 1 micrometer. Claim 1 is not anticipated by Dunlop for at least the reason that Dunlop does not disclose or suggest a sputtering target made by a casting process and having the claim 1 recited features.

The Examiner appears to recognize that Dunlop does not disclose all of the recited features of claim 1, but contends that Dunlop is using methodology substantially identical to that disclosed by Applicant, and accordingly is inherently producing a target having all of the claim 1 recited features. Applicant submits that Dunlop is not utilizing substantially the same methodology as that disclosed by Applicant. Although Dunlop and Applicant both utilize equal channel angular extrusion (ECAE) for treatment of

metallic materials and ultimate formation of sputtering targets from the materials, a significant difference between Dunlop's procedure and that recited in claim 1 is that claim 1 indicates that the recited sputtering target is formed from a cast material. Dunlop only utilizes ECAE in combination with materials formed by an atomization process (i.e., in combination with materials which are not formed by a cast process). Dunlop describes an atomization process as being a primary treatment of a workpiece at, for example, col. 6, Ins. 3-60. Further, Dunlop compares and contrasts the disclosed atomization process with conventional casting techniques throughout the disclosure of the application. Dunlop introduces ECAE as a process which can follow an atomization process in order to achieve "both additional reduction in grain size and desired grain orientation" at, for example, col. 6, In. 66 through col. 7, In. 2. Dunlop does not disclose that the ECAE can be utilized on a cast material, and in fact is generally teaching away from the utilization of cast materials. As Dunlop does not describe a sputtering target having the claim 1 recited features and formed from the claim 1 recited cast material, Dunlop is not teaching all of the recited features of claim 1. For at least this reason, claim 1 is allowable over Dunlop.

Claim 1 is further allowable over Dunlop for the reason that the claim 1 recited features are not inherent in the process described by Dunlop. Specifically, the Examiner is mistaken in concluding that Dunlop is using a process substantially identical to that disclosed by Applicant. Since Dunlop's process does not comprise ECAE treatment of a cast material, Dunlop's process is not substantially the same as that described in Applicant's disclosure. Accordingly, it is incorrect for the Examiner to conclude that Dunlop's materials would inherently comprise the same qualities recited in claim 1. Claim 1 recites a sputtering target formed from a cast material, and yet

having a substantial absence of inhomogeneities that are traditionally classified as "casting defects" (e.g., pores, voids and inclusions). Dunlop provides no teaching as to whether the processes described therein can be utilized to remove casting defects from a cast material. For this additional reason, Dunlop does not disclose or suggest the subject matter of claim 1.

For at least the above-discussed reasons, claim 1 is not anticipated or rendered obvious by Dunlop. Applicant therefore requests allowance of claim 1 in the Examiner's next action.

Claims 2-3 depend from claim 1, and are therefore allowable for at least the reasons discussed above regarding claim 1. Applicant therefore requests formal allowance of claims 2-3 in the Examiner's next action.

New claims 45-60 are also believed allowable. New claims 45-60 are supported by the originally-filed application, and therefore do not comprise "new matter". For instance, claims 45 and 57 are supported by the originally-filed application at page 2, line 7; and claims 46-56 and 58-60 are supported by the originally-filed application at, for example, originally-filed claims 1 and 2.

New claims 45-54 depend from claim 1, and are therefore allowable for at least the reasons discussed above regarding claim 1.

New claim 55, like the above-discussed claim 1, recites a sputtering target formed from a cast material and comprising a substantial absence of pores, voids and inclusions; and further comprising a grain size of less than about 1 micrometer (specifically recited as an average grain size of less than about 1 micrometer). New claim 55 is therefore allowable for reasons similar to those discussed above regarding claim 1, and Applicant requests such allowance in the Examiner's next action.

New claims 56 - 60 depend from claim 55, and are therefore allowable for at least the reasons discussed above regarding claim 55.

Claims 1-3 are allowable for the reasons discussed above; and new claims 45-60 are believed allowable. Applicant therefore requests formal allowance of claims 1-3 and 45-60 in the Examiner's next action.

Respectfully submitted,

By:   
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Group Art Unit..... 1742  
Examiner ..... H. Wilkins III  
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Title: Sputtering Targets Formed From Cast Materials

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING  
RESPONSE TO MARCH 6, 2001 OFFICE ACTION

In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

2. (Once Amended) A sputtering target according to claim 1 comprising one or more of Al, Ti, Cu, Ta, Ni, Mo, Au, Ag, and Pt.